

Safety and Health Management Guidelines

Scope and Application. (1) This guideline applies to all places of employment which are covered by OSHA standards in 29 CFR Parts 1910, 1915, 1917 and 1918.

(2) This guideline does not apply to places of employment which are covered by OSHA standards found in 29 CFR Part 1926.

Introduction. The Occupational Safety and Health Administration (OSHA) has concluded that effective management of worker safety and health protection is a decisive factor in reducing the extent and the severity of work-related injuries and illnesses. Effective management addresses all work-related hazards, including those potential hazards which could result from a change in worksite conditions or practices. It addresses hazards whether or not they are regulated by government standards. OSHA has reached this conclusion in the course of its evaluation of worksites in its enforcement program, its State-operated consultation program, and its Voluntary Protection Programs. These evaluations have revealed a basic relationship between effective management of worker safety and health protection and a low incidence and severity of employee injuries. Such management also correlates with the elimination or adequate control of employee exposure to toxic substances and other unhealthful conditions.

OSHA's experience in the Voluntary Protection Programs has also indicated that effective management of safety and health protection improves employee moral and productivity, as well as significantly reducing workers' compensation costs and other less obvious costs of work-related injuries and illnesses.

Through an analysis of public comment received in response to its request and through an earlier review of literature. OSHA has found that the conclusions it has reached from its own experience are supported by a substantial body of expert and practitioner opinion.

Based on this cumulative evidence that systematic management policies, procedures and practices are fundamental to the reduction of work-related injuries and illnesses and their attendant economic costs. OSHA offers the following guidelines for effective management of worker safety and health protection. OSHA urges all employers to establish and to maintain programs which meet these guidelines in a manner which addresses the specific operations and conditions of their worksites.

The Guidelines

(a) **General.** (1) Employers are advised and encouraged to institute and maintain in their establishments a program which provides systematic policies, procedures, and practices that are adequate to recognize and protect their employees from occupational safety and health hazards.

(2) An effective program includes provisions for the systematic identification, evaluation, and prevention or control of general workplace hazards, specific job hazards, and potential hazards which may arise from foreseeable conditions.

(3) Although compliance with the law, including specific OSHA standards, is an important objective, and effective program looks beyond specific requirements of law to address all hazards. It will seek to prevent injuries and illnesses, whether or not compliance is at issue.

(4) The extent to which the program is described in writing is less important than how effective it is in practice. As the size of a worksite or the complexity of a hazardous operation increases, however, the need for written guidance increases to ensure clear communications of policies and priorities and consistent and fair application of rules.

(b) **Major Elements.** An effective occupational safety and health program will include the following four elements. To implement these elements, it will include the actions described in paragraph (c).

(1) **Management commitment and employee involvement** are complementary. Management commitment provides the motivating force and the resources for organizing and controlling activities within an organization. In an effective program, management regards workers safety and health as a fundamental value of the organization and applies its commitment to safety and health protection with as much vigor as to other organizational purposes. Employee involvement provides the means through which workers develop and/or express their own commitment to safety and health protection, for themselves and for their fellow workers.

(2) **Worksite analysis** involves a variety of worksite examinations, to identify not only existing hazards but also conditions and operations in which changes might occur to create hazards. Unawareness of a hazard which stems from failure to examine the worksite is a sure sign that safety and health policies and/or practices are ineffective. Effective management actively analyzes the work and worksite, to anticipate and prevent harmful occurrences.

(3) **Hazard prevention and controls** are triggered by a determination that a hazard or potential hazard exists. Where feasible, hazards are prevented by effective design of the jobsite or job. Where it is not feasible to eliminate them, they are controlled to prevent unsafe and unhealthful exposure. Elimination or controls is accomplished in a timely manner, once a hazard or potential hazard is recognized.

(4) **Safety and health training** addresses the safety and health responsibilities of all personnel concerned with the site, whether salaried or hourly. It is often most effective when incorporated into other training about performance requirements and job practices. Its complexity depends on the size and complexity of the worksite, and the nature of the hazards and potential hazards at the site.

(c) Recommended Actions (i) Management Commitment and Employee Involvement. (i) State clearly a worksite policy on safe and healthful work and working conditions, so that all personnel with responsibility at the site and personnel at other locations with responsibility for the site understand the priority of safety and health protection in relation to other organizational values.

(ii) Establish and communicate a clear goal for the safety and health program and objectives for meeting that goal, so that all members of the organization understand the results desired and the measures planned for achieving them.

(iii) Provide visible top management involvement in implementing the program, so that all will understand that management's commitments is serious.

(iv) Provides for the encouragement of employee involvement in the structure and operation of the program and in decisions that affect their safety and health, so that they will commit their insight and energy to achieving the safety and health program's goal and objectives.

(v) Assign and communicate responsibility for all aspects of the program so that managers, supervisors, and employees in all parts of the organization know what performance is expected of them.

(vi) Provide adequate authority and resources to responsible parties, so that assigned responsibilities can be met.

(vii) Hold managers, supervisors, and employees accountable for meeting their responsibilities, so that essential tasks will be performed.

(viii) Review program operations at least annually to evaluate their success in meeting the goal and objectives, so that deficiencies can be identified and the program and/or the objectives can be revised when they do not meet the goal of effective safety and health protection.

(2) Worksite Analysis. (i) So that all hazards are identified:

(A) Conduct comprehensive baseline worksite surveys for safety and health and periodic comprehensive update surveys:

(B) Analyze planned and new facilities, processes, materials, and equipment; and

(C) Perform routine job hazard analyses.

(ii) Provide for regular site safety and health inspection, so that new or previously missed hazards and failures in hazard controls are identified.

(iii) So that employee insight and experience in safety and health protection may be utilized and employee concerns may be addressed, provide a reliable system for employees, without fear of reprisal, to notify management personnel about conditions that appear hazardous and to receive timely and appropriate responses; and encourage employees to use the system.

(iv) Provide for investigation of accidents and "near miss" incidents, so that their causes and means for their prevention are identified.

(v) Analyze injury and illness trends over time, so that patterns with common causes can be identified and prevented.

(3) Hazard Prevention and Control. (i) So that all current and potential hazards, however detected, are corrected or controlled in a timely manner, established procedures for that purpose, using the following measures:

(A) Engineering techniques where feasible and appropriate:

(B) Procedures for safe work which are understood and followed by all affected parties, as a result of training, positive reinforcement, correction of unsafe performance, and, if necessary, enforcement through a clearly communicated disciplinary system:

(C) Provision of personal protective equipment; and

(D) Administrative controls, such as reducing the duration of exposure.

(ii) Provide for facility and equipment maintenance, so that hazardous breakdown is prevented.

(iii) Plan and prepare for emergencies, and conduct training and drills as needed, so that the response of all parties to emergencies will be "second nature."

(iv) Establish a medical program which includes availability of first aid on site and of physician and emergency medical care nearby, so that harm will be minimized if any injury or illness does occur.

(4) Safety and Health Training. (i) Ensure that all employees understand the hazards to which they may be exposed and how to prevent harm to themselves and others from exposure to these hazards, so that employees accept and follow established safety and health protections.

(ii) So that supervisors will carry out their safety and health responsibilities effectively, ensure that they understand those responsibilities and the reasons for them, including:

(A) Analyzing the work under their supervision to identify unrecognized potential hazards:

(B) Maintaining physical protections in their work areas; and

(C) Reinforcing employee training on the nature of potential hazards in their work and on needed protective measures, through continual performance feedback and, if necessary, through enforcement of safe work practices.

(iii) Ensure that managers understand their safety and health responsibilities, as described under (c)(1). "Management Commitment and Employee Involvement," so that the managers will effectively carry out those responsibilities.

The Commentary

(Paragraph by Paragraph)

This Commentary indicates the background and rationale for each part of the guidelines. To facilitate its use, each segment

of the guidelines except the introduction is repeated just before it is discussed. The background of the introduction immediately follows this paragraph.

Introduction

Comment on Introduction. Over the years, OSHA and State enforcement and consultation staff have seen many examples of exemplary workplaces where safety and health programs were well managed and where injury rates were exceptionally low. The common characteristics observed at these sites were the use of organized and systematic methods to assign appropriate responsibility to all managers, supervisors, and employees, to inspect regularly for and control existing and potential hazards, and to orient and train all employees in the ways and means to eliminate or avoid those hazards.

The fundamental importance of such methods has been reflected in decisions of the Occupational Safety and Health Review Commission and the U.S. Courts of Appeal, especially in cases involving an employer claim that a violative workplace condition or action resulted from unpreventable employee misconduct. Such misconduct has been recognized as a defense against citation only when an employer had a work rule prohibiting the conduct, had provided training to ensure that the rule was understood, and had supplied adequate supervision (including regular inspections and work rule enforcement) to ensure that the work rule was followed. These criteria have been applied by the courts in cases involving the citation of OSHA standards as well as the general duty clause. The implication of these cases is that an employer has the duty to establish and maintain such management practices, to the extent that they are necessary to ensure that safe and healthful working conditions are maintained and that safe and healthful work practices are followed.

OSHA has reflected the importance of effective safety and health program management by including program management requirements in standards; by recommending safety and health program improvements in conjunction with inspections; by issuing citations under the general duty clause of the Occupational Safety and Health Act of 1970 (Sec. 5(a)(1), 29 U.S.C. 654) which include safety and health management factors; by revising its State-operated consultation program to focus on the promotion of effective safety and health management; and by a range of other promotional efforts.

To further encourage employers and employees to adopt and improve existing safety and health programs, OSHA established on July 2, 1982 (47 FR 29025), the Voluntary Protection Programs (VPP) to recognize worksites with exemplary safety and health management. The participation requirements embodied in the VPP are a distillation of the means, methods, and processes already in use at worksites where safety and health conditions are exceptionally good.

Because VPP participating worksites are officially recognized and are excluded from routine programmed OSHA inspections, the quality of the safety and health programs at these sites must be maintained and serve as models of effectiveness. In 1988, 62 sites were participating in the VPP, and several had been in the program for five or more years. Collectively, during their participation in the VPP, these sites experienced lost-time injuries that were approximately one-fifth to one-third of the average for their industrial classifications. (Unpublished statistics, U.S. Department of Labor, OSHA, 1988).

The fact the VPP participants have injury rates which are so much lower than their industry averages demonstrates that significant reduction is possible. It also strongly indicates that the requirements of the VPP, distilled in the management policies, procedures, and practices described in these recommended guidelines, are a major means to achieve the reduction.

In addition, employers at these sites reported improved morale and productivity benefits, as well as significantly reduced workers' compensation and other costs. One plant manager found that the implementation of a single safe work practice at his 44-employee plant during the first three years of participation in the VPP resulted in a greater volume of product and a reduction in rejected project. This change alone saved \$265,000 a year. (Proceedings of Public Information Gathering Meeting on Suggested Guidelines

for General Safety and Health Programs. U.S. Department of Labor, OSHA, Docket No. C-02. P.77 (October 6, 1988).)

The reduction in workers' compensation and other costs and the improvements in worksite morale and productivity reported by VPP participants reflect significant economic benefits which complement the substantial safety and health benefits of improvement management of worker protection. A Business Roundtable report (Improving Construction Safety Performance (New York, The Business Roundtable. Report A-3. January, 1982). p. 16) concludes that, for construction, the savings from effective administration of safety and health protection is 3.2 times the cost. OSHA has no independent confirmation of this ratio nor of its relevance to industries other than construction. Based on its experience with VPP sites and the conclusions of experienced safety and health professionals, however, OSHA believes that the long-term benefits of effective safety and health management consistently exceed its costs.

To understand this conclusion, it is essential to understand the indirect as well as the direct costs of occupational injuries and illnesses.

According to commonly accepted safety management concepts as outlined by Frank E. Bird, Jr. in his Management Guide to Loss Control (Loganville, GA: Institute Press, 1978), for every \$1 in medical or insurance compensation costs ("direct costs") for a worker injury, \$5-50 more are likely to be spent on "indirect costs" to repair building, tool or equipment damage; to replace damage products or materials; and to make up for losses from production delays and interruptions. An additional \$1-3 in indirect costs will be spent for hiring and training replacements and for time to investigate the incident. Mr. Bird's figures do not consider the impact of reduced commitment to work when employees operate in a situation in which injuries are common. Because they frequently involve longer absences, the impact of job-related illnesses can be even greater.

Although economic incentives are secondary to human health and safety as motives for safety and health protection, an employer may find it useful to calculate the total (direct and indirect) costs of injuries and illnesses as a means of determining the economic benefits which might be achieved by preventing the injuries and illnesses. By determining the average cost of an injury and of an illness, the employer can estimate the incremental impact of reducing the rate of injuries and illnesses at the site and therefore the potential economic benefit of such reduction.

Some employers may wish to compare their savings or costs in relation to the nation average for their industries. A method which can be used for that comparison with respect to occupational injuries is described by David R. Bell, a former OSHA employee, in his article, "Gauging Safety Outlays and Objectives," in Occupational Hazards. June, 1987. If the lost workday case rate (LWCR) for a site is below the national average, a formula provided by Bell can be used to calculate how many fewer injuries occurred than would have occurred if the site rate had equalled the national average. (Lost workdays case rates are published annually by the Bureau of Labor Statistics in "Occupational Injuries and Illnesses in the United States by Industry", available from the U.S. Government Printing Office, Washington, DC 20402. The rate for each industry represents the average number of lost workday cases that occurred per 100 employees in the industry).

The number of cases which would have occurred if the site rate had been average Bell calls "expected cases" and the actual cases he calls "injuries avoided." His formula, in which "employment at the site" means the number of equivalent work-years at the site during the year, is as follows:

$$\begin{aligned} \text{Industry LWCR} &= \text{Employment at the site} \\ 100 &= \text{Expected LW Cases} -- \\ \text{Actual LW Cases} &= \\ \text{Number of Injuries} & \\ \text{Avoided} & \end{aligned}$$

If the site lost workday case rate is above, the national average, the number of cases by which the site exceeds the national average can be

determined by subtracting "expected cases" from "actual cases," once the former number has been calculated.

By multiplying the number of "injuries avoided" or the number of injuries above the average by the average cost of an injury at the site, the employer can estimate the savings or losses which resulted from the quality of its management of safety protection relative to national performance. (Because national data on the incidence of occupational illnesses is incomplete, the formula is less useful in relation to occupational health protection.)

(a) General

"(a) **General.** (1) Employers are advised and encouraged to institute and maintain in their establishments a program which provides systematic policies, procedures, and practices that are adequate to recognize and protect their employees from occupational safety and health hazards."

Comment: *In essence, this paragraph states that the end (protection of employees from occupational safety and health hazards) determines the means. The criterion for determining what is needed in a safety and health program at a particular site is: whatever feasible action it takes to protect the workers from the safety and health hazards at that specific site. The form of the safety and health program elements and implementing actions will vary at each site according to the nature of site organization and the nature of the hazards and potential hazards at the site.*

"(2) An effective program includes provisions for the systematic identification, evaluation, and prevention or control of general workplace hazards, specific job hazards and potential hazards, which may arise from foreseeable conditions."

Comment: *Provisions for identifying and preventing hazards are systematic. If not, hazards or potential hazards will be missed and/or preventive controls will break down, and the chance of injury or illness will significantly increase.*

General workplace hazards include such conditions as tripping hazards in walking areas and poor illumination. Specific job hazards may relate to the specific conditions in a job, such as exposure to a saw blade, or to the inherent hazardousness of an operation required in the job, such as the removal of jammed material from a point of operation. Potential hazards include such situations as the possibility of exposure to toxic chemicals as a result of a rupture of piping from the impact of a forklift.

"(3) Although compliance with the law, including specific OSHA standards, is an important objective, an effective program looks beyond specific requirements of law to address all hazards. It will seek to prevent injuries and illnesses, whether or not compliance is at issue."

Comment: *OSHA and other government standards provide important guidance on the identification and control of hazards, but they are not always enough. Although compliance with the law is an important objective of and motive for an effective program. OSHA has found that the most successful programs look beyond government standards and legal requirements. They look for other sources of information about hazards, such as the National Electrical Code (NEC), the American Conference of Government Industrial Hygienists (ACGIH), and the American National Standards Institute (ANSI): and they use their own seasoned analytical abilities to look for and address hazards not covered by government or other standards. Their motive is to prevent injuries and illnesses and the attendant human and economic costs, whether or not*

compliance with the law is at issue. This approach is essential in view of the difficulty that regulatory agencies have in moving quickly to set standards for every possible hazard in the workplace and to revise them when new information becomes available.

"(4) The extent to which the program is described in writing is less important than how effective it is in practice. As the size of a worksite or the complexity of a hazardous operation increases, however, the need for written guidance increases to ensure clear communication of policies and priorities and consistent and fair application of rules."

Comment: OSHA recognizes that relatively simple, unwritten policies, practices, and procedures are adequate to address the hazards in many smaller or less hazardous establishments. The more complex and hazardous the operation is, the more formal (written) and complex the program will probably need to be. A written program which is revised regularly can clarify policy, create consistency and continuity in its interpretation, serve as a checkpoint whenever there is a question of priority between safety and production, and support fair and equitable enforcement of safe work rules and practices.

(b) Major Elements

"(b) **Major Elements.** An effective occupational safety and health program will include the following four elements. To implement these elements, it will include the actions described in paragraph (c).

(1) **Management commitment and employee involvement** are complementary. Management commitment provides the motivation force and the resources for organizing and controlling activities within an organization. In an effective program, management regards worker safety and health as a fundamental value of the organization and applies its commitment to safety and health protection with as much vigor as to other organizational purposes. Employee involvement provides the means through which workers develop and/or express their own commitment to safety and health protection, for themselves and for their fellow workers.

(2) **Worksite analysis** involves a variety of worksite examinations, to identify not only existing hazards but also conditions and operations in which changes might occur to create hazards. Unawareness of a hazard which stems from failure to examine the worksite is a sure sign that safety and health policies and/or practices are ineffective. Effective management actively analyzes the work and worksite, to anticipate and prevent harmful occurrences.

(3) **Hazard prevention and control** are triggered by a determination that a hazard or potential hazard exists. Where feasible, hazards are prevented by effective design of the job site or job. Where it is not feasible to eliminate them, they are controlled to prevent unsafe or unhealthful exposure. Elimination or control is accomplished in a timely manner, once a hazard or potential hazard is recognized.

(4) **Safety and health training** addresses the safety and health responsibilities of all personnel concerned with the site, whether salaried or hourly. It is often most effective when incorporated into other training about performance requirements and job practices. Its complexity depends on the size and complexity of the worksite, and the nature of the hazards and potential hazards at the site."

Comment: *These paragraphs set forth the areas of managerial practice which are essential to effective safety and health protection. These practices, means, and methods are consistent with those used by employers to achieve other organizational objectives, such as cost control, quality, and productivity. Giving safety and health equal organizational priority in relation to these other objectives is fundamental to the protection of individual employees and to the effectiveness of the organization itself.*

These elements consist of methods historically used to accomplish organizational objectives. They are generic in that they are generally applicable regardless of unique operations or conditions of particular firms. Only the form which they take varies. Though at points they are expressed in the terms of the "hierarchical" organizations most common in American industry (i.e., by reference to "managers," "supervisors," "employees"), they can easily be adapted to other organizational forms or styles of operation. They relate to essential concerns and activities of any organization. It is on this basis that OSHA considers them applicable in shipyard employment, marine terminals, and longshoring as well as general industry.

(c) **Recommended Actions.**

(c)(1) **Management Commitment and Employee Involvement**

Comment: *Each action listed in this section represents the application to occupational safety and health of a key means for organizing, motivating and controlling activities within an organization.*

"(c)(1)(i) State clearly a worksite policy on safe and healthful work and working conditions, so that all personnel with responsibility at the site and personnel at other locations with responsibility for the site understand the priority of safety and health protection in relation to other organizational values."

Comment: *A statement of policy is the foundation of safety and health management. It communicates the value in which safety and health protection is held in the business organization. If it is absorbed by all in the organization, it becomes the basic point of reference for all decisions affecting safety and health. It also becomes the criterion by which the adequacy of protective actions is measured.*

"(c)(1)(ii) Establish and communicate a clear goal for the safety and health program and objectives for meeting that goal, so that all members of the organization understand the results desired and the measures planned for achieving them."

Comment: *A goal, and implementing objectives, make the safety and health policy more specific. Communicating them ensures that all in the organization understand the direction it is taking.*

"(c)(1)(iii) Provide visible top management involvement in implementing the program so that all will understand that management's commitment is serious."

Comment: *Actions speak louder than words. If top management gives high priority to safety and health protection in practice, other will see and follow. If not, a written or spoken policy of high priority for safety and health will have little credibility, and others will not follow it. Plant managers who wear required personal protective equipment in work areas, perform periodic "housekeeping" inspections, and personally track performance in safety and health protection demonstrate such involvement.*

"(c)(1)(iv) Provide for and encourage employee involvement in the structure and operation of the program and in decisions that affect their safety and health, so that they will commit their insight and energy to achieving the safety and health program's goal and objectives."

Comment: *Since an effective program depends on commitment by employees as well as managers, it is important for their concerns to be reflected in it. An effective program includes all personnel in the organization--managers, supervisors, and other--in policy development, planning, and operations.*

This does not mean transfer of responsibility to employees. The Occupational Safety and Health Act of 1970 clearly places responsibility for safety and health protection on the employer. However, employees intimate knowledge of the jobs they perform and the special concerns they bring to the job give them a unique perspective which can be used to make the program more effective.

Employee participation may take any or all of a number of forms. For instance, the system for notifying management personnel about conditions that appear hazardous serves as a major means of worksite analysis to identify hazards and is therefore included as paragraph (c)(2)(iii). Such a system is, however, by itself not sufficient to provide for effective employee involvement. Forms of participation which engage employees more fully in systematic prevention include (1) inspecting for hazards and recommending corrections or controls; (2) analyzing jobs to locate potential hazards and develop safe work procedures; (3) developing or revising general rules for safe work; (4) training newly hired employees in safe work procedures and rules, and/or training their co-workers in newly revised safe work procedures; (5) providing programs and presentations for safety meeting; and (6) assisting in accident investigations.

Such functions can be carried out in a number of organizational contexts. Joint labor-management committees are most common. Other means include labor safety committees, safety circle teams, rotational assignment of employees to such functions, and acceptance of employee volunteers for the functions.

Employee involvement is effective only when the employer welcomes it and provides protection from any discrimination, including unofficial harassment, to the employees involved. However, inclusion of employees in one or more of the suggested activities, or in any way that fits the individual worksite and provides an employee role that has impact on decisions about safety and health protection, will strengthen the employer's overall program of safety and health protection.

"(c)(1)(v) Assign and communicate responsibility for all aspects of the program, so that managers, supervisors, and employees in all parts of the organization know that performance is expected of them."

Comment: Assignment of responsibility for safety and health protection to a single staff member, or even a small group, will leave other members feeling that someone else is taking care of safety and health problems.

Everyone in an organization has some responsibility for safety and health. A clear statement of that responsibility, as it relates both to organizational goals and objectives and to the specific functions of individuals, is essential. If all persons in an organization do not know what is expected of them, they are unlikely to perform as desired.

"(c)(1)(vi) Provide adequate authority and resources to responsible parties, so that assigned responsibilities can be met."

Comment: It is unreasonable to assign responsibility without providing adequate authority and resources to get the job done. For example, a person with responsibility for the safety of a piece of machinery needs the authority to shut it down and get it repaired. Needed resources may include adequately trained and equipped personnel and adequate operational and capital expenditure funds.

"(c)(1)(vii) Hold managers, supervisors, and employees accountable for meeting their responsibilities, so that essential tasks will be performed."

Comment: Stating expectations of managers, supervisors, and other employees means little if management is not serious enough to track performance, to reward it when it is competent and to correct it when it is not. Holding everyone accountable for meeting their responsibilities is at the heart of effective workers safety and health protection. If management states high expectations for such protection but pays greater attention to productivity or other values, safety and health protection will be neglected.

To be effective, a system of accountability must be applied to everyone, from senior management to hourly employees. If some are held firmly to expected performance and other are not, the system will lose its credibility. Those held to expectations will be resentful; those allowed to neglect expectations may increase their neglect. Consequently, the chance of injury and illness will increase.

"(c)(1)(viii) Review program operations at least annually to evaluate their success in meeting the goal and objectives, so that deficiencies can be identified and the program and/or the objectives can be revised when they do not meet the goal of effective safety and health protection."

Comment: A Comprehensive program audit is essential periodically to evaluate the whole set of safety and health management means, methods, and processes, to ensure that they are adequate to protect against the potential hazards at the specific worksite. The audit determines whether policies and procedures are implemented as planned and whether in practice they have met the objectives set for the program. It also determines whether the objectives provide sufficient challenge to lead the organization to meet the program goal of effective safety and health protection. When either performance or the objectives themselves are found inadequate, revisions are made. Without such a comprehensive review, program flaws and their interrelationship may not be caught and corrected.

(c)(2) Worksite Analysis

Comment: The identification of hazards and potential hazards at a worksite requires an active, on-going examination and analysis of work

processes and working conditions. Because many hazards are by nature difficult to recognize, effective examination and analysis will approach the work and working conditions from several perspectives. Each of the activities recommended in this paragraph represents a different perspective.

The recognition of hazards which could result from changes in work practices or conditions requires thorough observation and thought, both from those who perform the work and those who are specially trained for that purpose. Since such divergence from the routine and familiar is often the occasion for injuries and health hazard exposures to occur, the anticipation of such changes is critical.

Identification at a worksite of those safety and health hazards which are recognized in its industry is a critical foundation for safety and health protection. It is the general duty of the employer under the Occupational Safety and Health Act of 1970. Successful employers will actively seek the benefit of the experience of others in their industry, through trade associations, equipment manufacturers, and other sources.

An effective program does not stop at this point, however. It continually reviews working conditions and operations to identify hazards which have not previously been recognized in the industry.

Implicit in the provision for the survey, reviews, and analyses recommended in this section is the need for employers to seek competent advice and assistance when they lack needed expertise and to use appropriate means and methods to examine and assess all existing and foreseeable hazards. Personnel who perform comprehensive baseline and update surveys, analysis of new facilities, processes, procedures, and equipment, and job hazard analyses may require greater expertise than those who conduct routine inspections, since the former are conducting a broader and/or deeper review.

Personnel performing regular inspections should, however, possess a degree of experience and competence adequate to recognize hazards in the areas they review and to identify reasonable means for their correction or control. Such competence should normally be expected of ordinary employees who are capable of safely supervising or performing the operations of the specific workplace. Smaller businesses which need assistance in the development of such competence can receive free assistance from a number of sources, including OSHA and a nationwide network of OSHA-funded, State-operated consultation projects.

"(c)(2)(i) So that all hazards and potential hazards are identified:

(A) conduct comprehensive baseline worksite survey for safety and health and periodic comprehensive update surveys;

(B) analyze planned and new facilities, processes, materials, and equipment; and

(C) perform routine job hazard analyses."

Comment: A comprehensive baseline survey of the work and working conditions at a site permits a systematic recording of those hazards and potential hazards which can be recognized without intensive analysis. This baseline record provides a checklist for the more frequent routine inspections, recommended in paragraph (c)(2)(ii). With those hazards under control, attention can be given to the intensive analysis required to recognize less obvious hazards.

Subsequent comprehensive surveys provide an opportunity to step back from the routine check on control of previously recognized hazards and look for others. With the baseline established, these subsequent reviews are one occasion for focusing more intensive analysis in areas with the highest potential for new or less obvious hazards. The frequency with which comprehensive examinations are needed depends on the complexity, hazardousness, and changeability of the worksite. Many successful worksites conduct such reviews on an annual or biannual basis.

Analysis of new facilities, processes, materials, and equipment in the course of their design and early use (sometimes called "change analysis") provides a check against the introduction of new hazards with them.

Effective management ensures the conduct of such analyses during the planning phase, just before their first use, and during the early phases of their use. Numerous specific OSHA standards require inspection of particular equipment, conditions, and activities as a safety precaution prior to operation or use. This guideline makes clear that, in effective safety and health programs, this generally recognized inspection practice is applied more broadly to all conditions and activities.

Job hazard analysis is an important tool for more intensive analysis to identify hazards and potential hazards not previously recognized, and to determine protective measures. Through more careful attention to the work processes in a particular job, analysis can recognize new points at which exposure to hazards may occur or at which foreseeable changes in practice or conditions could result in new hazards.

"(c)(2)(ii) Provide for regular site safety and health inspections, so that new or previously missed hazards and failures in hazard controls are identified."

Comment: Once a comprehensive examination of the workplace has been conducted and hazard controls have been established, routine site safety and health inspections are necessary to ensure that changes in conditions and activities do not create new hazards and that hazard controls remain in place and are effective. Routine industrial hygiene monitoring and sampling are essential components of such inspections in many workplaces.

Personnel conducting these inspections also look out for new or previously unrecognized hazards, but not as thoroughly as those conducting comprehensive surveys.

The frequency and scope of these "routine" inspection depends on the nature and severity of the hazards which could be present and the relative stability and complexity of worksite operations.

"(c)(2)(iii) So that employee insight and experience is safety and health protection may be utilized and employee concerns may be addressed, provide a reliable system for employees, without fear of reprisal, to notify management personnel about conditions that appear hazardous and to receive timely and appropriate responses; and encourage employees to use the system."

Comment: A reliable system for employees to notify management of conditions or practices that appear hazardous and to receive a timely and appropriate response serves a dual purpose. It gives management the benefit of many more points of observations and more experienced insight in recognizing hazards or other symptoms of breakdown in safety and health protection systems. It also gives employees assurance that their investment in safety and health is worthwhile.

A system is reliable only if it ensures employees a credible and timely response. The response will include both timely action to address any problems identified and a timely explanation of why particular actions were or were not taken. Since the employer benefits from employee notices, effective management will not only guard against reprisals to avoid discouraging them but will take positive steps to encourage their submission.

"(c)(2)(iv) Provide for investigation of accidents and 'near miss' incidents, so that their causes and means for preventing repetitions are identified."

Comments: Accidents, and incidents in which employees narrowly escape injury, clearly expose hazards. Analysis to identify their causes permits development of measures to prevent future injury or illness. Although a first look may suggest that "employee error" is a major factor, it is rarely sufficient to stop there. Even when an employee has disobeyed a required work practice, it is critical to ask, "Why?" A thorough analysis will generally reveal a number of deeper factors, which permitted or even encouraged an employee's action. Such factors may include a supervisor's allowing or pressuring the employee to take short cuts in the interest of production, inadequate equipment, or a work practice which is difficult for the employee to carry out safely. An effective analysis will identify actions to address each of the causal factors in an accident or "near miss" incident.

"(c)(2)(v) Analyze injury and illness trends over time, so that patterns of common causes can be identified and prevented."

Comment: A review of injury experience over a period of time may reveal patterns of injury with common causes which can be addressed. Correlation of changes in injury experience with changes in safety and health program operations, personnel, and production processes may help to identify causes.

(c)(3) Hazard Prevention and Control

Comment: Effective management prevents or controls identified hazards and prepares to minimize the harm from job-related injuries and illnesses when they do occur.

"(c)(3)(i) So that all current and potential hazards, however detected, are corrected or controlled in a timely manner, establish procedures for that purpose, using the following measures:

- (A) engineering techniques where feasible and appropriate;
- (B) procedures for safe work which are understood and followed by all affected parties, as a result of training, positive reinforcement, and, if necessary, endorsement through a clearly communicated disciplinary system;
- (C) provision of personal protective equipment; and
- (D) administrative controls, such as reducing the duration of exposure."

Comment: Hazards, once recognized, are promptly prevented or controlled. Management action in this respect determines the credibility of its safety and health management policy and the usefulness of its entire program.

An effective program relies on the means for prevention or control which provides the best feasible protection of employee safety and health.

It regards legal requirements as a minimum. When there are alternative ways to address a hazard, effective managers have found that involving employees in discussions of methods can identify useful prevention and control measures, serve as a means for communicating the rationale for decisions made, and encourage employee acceptance of the decisions.

When safe work procedures are the means of protection, ensuring that they are followed becomes critical. Ensuring safe work practices involves discipline in both a positive sense and a corrective sense. Every component of effective safety and health management is designed to create a disciplined environment in which all personnel act on the basis that worker safety and health protection is a fundamental value of the organization. Such an environment depends on the credibility of management's involvement in safety and health matters, inclusion of employees in decisions which affect their safety and health, rigorous

worksite analysis to identify hazards and potential hazards, stringent prevention and control measures, and thorough training. In such an environment, all personnel will understand the hazards to which they are exposed, why the hazards pose a threat, and how to protect themselves and others from the hazards. Training for the purpose is reinforced by encouragement of attempt to work safely and by positive recognition of safe behavior.

If, in such a context, an employee, supervisor, or manager fails to follow a safe procedure, it is advisable not only to stop the unsafe action but also to determine whether some condition of the work has made it difficult to follow the procedure or whether some management system has failed to communicate the danger of the action and the means for avoiding it. If the unsafe action was not based on an external condition or a lack of understanding, or if, after such external condition or lack of understanding has been corrected, the person repeats the action, it is essential that corrective discipline be applied. To allow an unsafe action to continue not only continues to endanger the actor and perhaps others; it also undermines the positive discipline of the entire safety and health program. To be effective, corrective discipline must be applied consistently to all, regardless of role or rank; but it must be applied.

Factors which may affect the time required for correction of hazards include: (1) The complexity abatement technology; (2) the degree of risk; and (3) the availability of necessary equipment, materials, and staff qualified to complete the correction. Because conditions affecting hazard correction and control vary widely, it is impractical of OSHA to recommend specific time limits for all situations. An effective program corrects hazards in the shortest time permitted by the technology required and the availability of needed personnel and materials. It also provides for interim protection when immediate correction is not possible.

"(c)(3)(ii) Provide for facility and equipment maintenance, so that hazardous breakdown is prevented."

Comment: Maintenance of equipment of facilities is an especially important means of anticipating potential hazards and preventing their development. Planning, scheduling, and tracking preventive maintenance activities provides a systematic way of ensuring that they are not neglected.

"(c)(3)(iii) Plan and prepare for emergencies, and conduct training and drills as needed, so that the response of all parties to emergencies will be "second nature."

Comment: Planning and training for emergencies is essential in minimizing the harmful consequences of an accident or other threat if it does occur.

If personnel are not so thoroughly trained to react to emergencies that their responses are immediate and precise, they may expose themselves and others to greater danger rather than reduce their exposure. The nature of potential emergencies depends on the nature of site operations and its geographical location. The extent to which training and drills are needed depends on the severity and complexity of the emergencies which may arise.

"(c)(2)(iv) Establish a medical program which includes availability of first aid on site and of physician and emergency medical care nearby, so that harm will be minimized if an injury or illness does occur."

Comment: The availability of first aid and emergency medical care are essential in minimizing the harmful consequences of injuries and illnesses if they do occur. The nature of services needed will depend on the seriousness of injuries or health hazard exposures which may occur. Minimum requirements are addressed in OSHA standards.

(c)(4) Safety and Health Training

Comment: Education and training are essential means for communicating practical understanding of the requirements of effective safety and health protection to all personnel. Without such understanding, managers, supervisors, and other employees will not perform their responsibilities for safety and health protection effectively.

It is not suggested that elaborate or formal training programs solely related to safety and health are always needed. Integrating consideration of safety and health protection into all organizational activities is the key to its effectiveness. Safety and health information and instruction is, therefore, often most effective when incorporated into other training about performance requirements and job practices, such as management training on performance evaluation, problem solving, or managing change; supervisors' training on the reinforcement of good work practices and the correction of poor ones; and employee training on the operation of a particular machine or the conduct of a specific task.

Each paragraph in this section recommends that the employer ensure understanding of safety and health information by employees, supervisors, and managers. The act of training itself is not sufficient to ensure practical comprehension. Some means of verifying comprehension is essential. Formal testing, oral questioning, observation, and other means can be useful.

In its Voluntary Protection Programs. OSHA has found that observing and interviewing employees, supervisors, and managers are the most effective measures for determining their understanding of what is expected of them in practice. Although there is no fully reliable means for ensuring understanding, effective safety and health management will apply the same diligence with respect to safety and health protection as is applied to ensuring an understanding of other operational requirements, such as time and attendance, production schedules, and job skills.

"(c)(4)(i) Ensure that all employees understand the hazards to which they may be exposed and how to prevent harm to themselves and others from exposure to these hazards, so that employees accept and follow established safety and health protections."

Comment: The commitment and cooperation of employees in preventing and controlling exposure to hazards is critical, not only for their own safety and health but for that of others as well. That commitment and cooperation depends on their understanding what hazards they may be exposed to, why the hazards pose a threat, and how they can protect themselves and others from the hazards. The means of protection which they need to understand include not only the immediate protections from hazards in their work processes and locations, but also the management systems which commit the organization to safety and health protection and provide for employee involvement in hazard identification and prevention.

OSHA's Hazard Communication Standard specifies, for chemical hazards, an employer duty to inform employees about workplace hazards and to provide training that will enable them to avoid work-related injuries or illnesses. Other standards set forth training requirements, as summarized in OSHA Publication 2254. "Training Requirements in OSHA Standards and Training Guidelines." The rationale for these standards requirements is, however, applicable in relation to all hazards. Education and training in safety and health protection is especially critical for employees who are assuming new duties. This fact is reflected by the disproportionately high injury rates among workers newly assigned to work tasks. Although some of these injuries may be attributable to other causes, a substantial number are directly related to inadequate knowledge of job hazards and safe work practices. The Bureau of

Labor Statistics reports that in 1979, 48 percent of workers injured had been on the job less than one year. ("The New Worker Factor Associated with Occupational Injuries and Illnesses," U.S. Department of Labor, Bureau of Labor Statistics, 1982.) These figures make clear the importance of training employees on job hazards and safe work practices before they assume new duties.

The extent of hazard information which is needed by employees will vary, but includes at least; (1) The general hazards and safety rules of the worksite; (2) specific hazards, safety rules, and practices related to particular work assignments; and (3) the employee's role in emergency situations. Such information and training is particularly relevant to hazards that may not be readily apparent to, to within the ordinary experience and knowledge of, the employee.

"(c)(4)(ii) So that supervisors will carry out their safety and health responsibilities effectively, ensure that they understand those responsibilities and the reasons for them, including;

(A) analyzing the work under their supervision to identify unrecognized potential hazards;

(B) maintaining physical protections in their work areas; and

(C) reinforcing employee training on the nature of potential hazards in their work and on needed protective measures, through continual performance feedback and, if necessary, through enforcement of safe work practices."

Comment: First-line supervisors have an especially critical role in safety and health protection because of their immediate responsibility for workers and for the work being performed. Effective training of supervisors will address their safety and health management responsibilities as well as information on hazards, hazard prevention, and response to emergencies. Although they may have other safety and health responsibilities, those listed in these guidelines merit particular attention.

"(c)(4)(iii) Ensure that managers understand their safety and health responsibilities" described under (c)(1). "Management Commitment and Employee Involvement," so that the managers will effectively carry out those responsibilities."

Comment: Because there is a tendency in some businesses to consider safety and health a staff function and to neglect the training of managers in safety and health responsibilities, the importance of managerial training is noted separately. Managers who understand both the way and the extent to which effective safety and health protection impacts on the overall effectiveness of the business itself are far more likely to ensure that the necessary safety and health management systems operates as needed.